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EXAMINER	
ALBRECHT, D	
ART UNIT	PAPER NUMBER
115	8

DATE MAILED:

01/20/88

This is a communication from the examiner in charge of your application.

COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☒ Responsive to communication filed on 12-7-87 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 1 month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice re Patent Drawing, PTO-948. |
| 3. <input type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449 | 4. <input type="checkbox"/> Notice of informal Patent Application, Form PTO-152 |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474 | 6. <input type="checkbox"/> _____ |

Part II SUMMARY OF ACTION

1. ☒ Claims 16-92 are pending in the application.
Of the above, claims _____ are withdrawn from consideration.
2. ☒ Claims 1-15 have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 16-92 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings which are acceptable for examination purposes until such time as allowable subject matter is indicated.
8. ☐ Allowable subject matter having been indicated, formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. These drawings are ☐ acceptable;
☐ not acceptable (see explanation).
10. ☐ The ☐ proposed drawing correction and/or the ☐ proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been ☐ approved by the examiner. ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved. ☐ disapproved (see explanation). However, the Patent and Trademark Office no longer makes drawing changes. It is now applicant's responsibility to ensure that the drawings are corrected. Corrections MUST be effected in accordance with the instructions set forth on the attached letter "INFORMATION ON HOW TO EFFECT DRAWING CHANGES", PTO-1474.
12. ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received
☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

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1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification is objected to under 35 U.S.C. 112, first paragraph, as failing to provide an enabling disclosure of the invention commensurate with the broad scope of the claims when M is entirely calcium, magnesium or mercury and when Y is equal to 2 and when d is equal to 0.1 and when x is equal to 1.0. The art of high temperature (above 300°K) superconductors is an extremely unpredictable one. Small changes in composition can result in dramatic changes in or loss of superconducting properties. The amount and type of examples necessary to support broad claims increases as the predictability of the art increases. See In re Fisher, 166 U.S.P.Q. 18, 24 and In re Angstadt and Griffin, 190 U.S.P.Q. 214, 218. Claims broad enough to cover a large number of compositions that do not exhibit the desired properties fail to satisfy the requirements of 35 U.S.C. 112. See In re Cook, 169 U.S.P.Q. 298, 302 and Cosden Oil v. American Hoechst, 214 U.S.P.Q. 244, 262. Merely reciting a desired result does not overcome this failure. In particular, the Examiner questions whether compositions wherein M is solely calcium, magnesium or mercury would

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possess the high temperature superconducting properties sought by applicants. It should be noted that at the time the invention was made the theoretical mechanism of superconductivity in these materials was not well understood (this still appears to be the case today). Accordingly, there appears to be little factual or theoretical basis for extending the scope of the claims much beyond the proportions and materials actually demonstrated to exhibit high temperature superconductivity. A "patent is not a hunting license. It is not a reward for the search, but a reward for its successful conclusion", Brenner v. Manson, 383 U.S. 518, 148 U.S.P.Q. 689. It should be noted that when x is equal to 1.0 the recited compositions contain no rare earth elements. The Examiner questions whether oxide compositions of the recited type containing no rare earth elements will possess the superconducting characteristics sought by applicant. In addition the claims are broad enough to cover the situation where the number of molecules of oxygen in the 12:3 compound is 6 or 6.1. The Rhyne article teaches that the 1:2:3 compound containing 6.05 moles of oxygen is non-superconducting.

2. Claims 16, 17, 20, 24, 29-31, 35, 40, 43-45, 47, 50, 51, 53, 56, 66-72, 73, 75-78, 82 and 88 are rejected under 35 U.S.C. 112, first paragraph, for the reasons set forth in the objection to the specification. These claims are inoperatively broad when M is solely or 99.9%calcium, magnesium or mercury.

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3. Claims 16-92 are rejected under 35 U.S.C. 112, first paragraph, for the reasons set forth in the objection to the specification. These claims are broader than the enabling disclosure and inoperatively broad when y is equal to 2 or d is equal to 0.1. It is suggested that functional language of the type in the claim proposed in paragraph ¹⁴ below be added to the claims.

4. Claims 16, 19, 47, 82 and 88 are rejected under 35 U.S.C. 112, first paragraph, for the reasons set forth in the objection to the specification. These claims are broader than the enabling disclosure and inoperatively broad when x is equal to 1.0. Applicant has not demonstrated that any compounds not containing a rare earth element possess the desired superconducting characteristics.

5. Claims 71 and 78-92 are rejected under 35 U.S.C. 112, first and second paragraphs, as the claimed invention is not described in such full, clear, concise and exact terms as to enable any person skilled in the art to make and use the same, and/or for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. These claims are broader than the enabling disclosure and indefinite in the recital of the "quenching" step. How fast must this step be performed? May this step take as long as 10 minutes? As long as one hour? As long as 4 hours?

6. Claim 34 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to

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particularly point out and distinctly claim the subject matter which applicant regards as the invention. This claim is indefinite in failing to define the relative proportions of the elements in the combination. May one of the elements constitute as much as 99.99% by weight of the combination?

7. In claim 65 "somarium" is misspelled.

8. Claims 29-34, 51, 52 and 76 are rejected under 35 U.S.C. 112, first paragraph, for the reasons set forth in the objection to the specification. These claims contain new matter in the recital of the range of "0.01 to about 0.03". The Examiner can find support for 0.01 in Example IX, but cannot find support in the original application for 0.03. Where does this value come from? Explanation or cancellation is required.

9. Claims 35-46 are rejected under 35 U.S.C. 112, first and second paragraphs, as the claimed invention is not described in such full, clear, concise and exact terms as to enable any person skilled in the art to make and use the same, and/or for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. These claims are broader than the enabling disclosure, non-enabling and indefinite in the recital "wherein the interatomic distances . . . are reduced compared to . . . atmospheric pressure". It is unclear how much these distances must be reduced to be within the scope of the present claims. Must these distances be reduced for all three axes of the crystal structure? This language is also indefinite in that the reference point is unclear. For

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example the density of these materials may vary depending upon the method of preparation. What is the density of the reference substance?

10. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

"A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

11. Claims 35-38, 40, 47, 50-55, 66-82, 88 and 89 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103 as obvious over each of Nguyen and Shaplygin. Each of these references discloses copper oxide compositions within the scope of these broad claims which exhibit some electrical conductivity properties. Although the authors of these references did not recognize that these compositions would exhibit superconductivity when cooled to a low enough temperature, this is still an inherent characteristic of the copper oxides disclosed by these references. It appears accordingly that each of these

references is an anticipation of these two claims. Accordingly, the burden of proof is upon applicants to show that the instantly claimed subject matter is different from and unobvious over that taught by this reference. See In re Brown, 173 U.S.P.Q. 685, 688; In re Best, 195 U.S.P.Q. 430 and In re Marosi, 218 U.S.P.Q. 289, 293.

12. Claims 16-19, 29-47, 50-55, 66-82, 88 and 89 are rejected under 35 U.S.C. 103 as being unpatentable over Bednorz in view of Nguyen and Shaplygin. Bednorz discloses the parent superconducting properties of oxides of the type recited in the present claims or of oxides analogous thereto. Nguyen discloses analogous compounds containing Sr instead of Ba. Shaplygin discloses the conducting properties of a class of similar materials where the rare earth and alkaline earth components may be varied. Accordingly, it would be obvious that the materials disclosed by Nguyen and Shaplygin would exhibit superconducting properties if cooled to temperatures in the range taught by Bednorz.

13. It should be noted that there were additional references cited against similar claims in applicant's co-pending application Serial No. 002,089 which could also be applied against the present claims. These rejections have not been made because it is believed they would be superfluous and unnecessary if applicant limits the scope of the present claims.

14. The following allowable claim is suggested for the purpose of an interference:

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A crystalline single phase composition exhibiting 0 electrical resistance at a temperature of 70°K or above, having the formula $LM_2Cu_3O_{6+d}$, wherein "L" is Sc, Y, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, or mixtures thereof; "M" is Ba, Sr or mixtures thereof; and "d" has a value from 0.1 to about 4.5 and is a value that provides the composition with 0 electrical resistance at a temperature of 70°K or above.

The suggested claim must be copied exactly, although other claims may be proposed under 37 CFR 1.605(a).

APPLICANT SHOULD MAKE THE SUGGESTED CLAIM WITHIN ONE MONTH FROM THE DATE OF THIS LETTER. FAILURE TO DO SO WILL BE CONSIDERED A DISCLAIMER OF THE SUBJECT MATTER OF THIS CLAIM UNDER THE PROVISIONS OF 37 CFR 1.605(a). THE EXTENSION OF TIME PROVISIONS OF 37 CFR 1.136(a) DO NOT APPLY TO THIS TIME PERIOD.

Claims 16, 17, 19-28, 35, 40-49, 56-75 and 78-92 are considered unpatentable over the above suggested claim.

15. Applicant need not respond to the remaining issues in this action if a suggested claim is copied for the purpose of an interference within the time limit specified above. 37 CFR 1.605(b).

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change

16. Claims 1 and 10 are rejected under 35 U.S.C. 112, first paragraph, for the reasons set forth in the objection to the specification. These claims are inoperatively broad when "A" is other than copper.

17. The remaining references listed on the Form PTO-892 further indicate the state of the art. Some of these references are cumulative to the references relied on in the rejection in paragraph ¹¹7 above.

18. Because of the fast moving pace of research in the field of high temperature superconductors, many scientific developments in this area are available as "preprints" many weeks or months prior to publication in a journal. It is the Examiner's position that such preprints are prior art as a printed publication under 35 U.S.C. 102(a) or (b) as of the date they are first distributed. See 3M v. Ansul, 213 U.S.P.Q. 1024, 1037. Any information of the above noted type that is material to the presently claimed subject matter available prior to the effective filing date of this application that applicant(s) are aware of should promptly be made of record pursuant to M.P.E.P. 609 and 37 CFR 1.56. In claims 2, 6 and 11 the word "yittrium" is misspelled. Correction is required.

19. Any evidence to be presented in accordance with 37 CFR 1.131 or 1.132 should be submitted before final rejection in order to be considered timely. It is anticipated that the next Office Action will be a final rejection.

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20. An inquiry concerning this communication should be directed to Dennis L. Albrecht at telephone number (703) 557-3593.

1-13-88:cdc

Dennis L. Albrecht

**DENNIS ALBRECHT
PRIMARY EXAMINER
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